

Making the test self grading:

Technical Way:

(1) Once a student has submitted their responses, click on the cell *in the same row as their responses* but to the right of the last one. So, for instance, if the last question of my sample quiz is in column *D*, and my first student response is in row *3*, I'm clicking on cell *E3* (same *row* as the student, next *column* to the right after the last question).

(2) In that cell, enter: `=arrayformula(sum(X$#:Y$#=X@:Y@))`

The `=` sign indicates that what follows is a formula. The `arrayformula()` function indicates that whatever is wrapped inside its parentheses will have array inputs; the `sum()` function takes a sum of the arguments in its parentheses (or in this case, the number that return "true"); and the last stuff is the array that we're actually counting.

- a) replace *X* with the column letter of the first correct answer
- b) replace *Y* with the column letter of the last correct answer
- c) replace *#* with the number of the row with the correct answers
- d) replace *@* with the number of the row with the first student's answers (probably one greater than the number of the row with the correct answers)
- e) Do not replace the dollar signs.

EXAMPLE: `=arrayformula(sum(C$2:E$2=C3:E3))`

The `C$2:E$2` means that the correct answers are in the cells between and including *C2* and *E2*. If your quiz has many more questions, and the answers go from *C2* and *ZZ2* (or whatever), you'll need to change that part of the formula to `C$2:ZZ$2`. Don't forget the dollar signs! (They'll be explained below.)

The `C3:E3` means that the answers of the student whose answers are in this row are in the cells between and including *C3* and *E3*. You'll want to make these letters match the letters you used with the dollar signs, since if the answers go from *C* to *ZZ* for the correct answer row, they should for the student, too. You'll want the numbers to be one higher than what you used first, since this student's answers will be one row beneath the correct answers. Make sure you don't have the dollar signs here!

So the formula `sum(C$2:E$2=C3:E3)` is asking how many cells between *C2* and *E2* are equal to the corresponding cells between *C3* and *E3*. (We need to wrap all this in the `arrayformula()` function since these ranges of cells make up array data.)

(3) Now, once you've entered that formula and hit enter, the cell should have the total number of that student's answers that match the correct answers. When that cell is highlighted, there should be a little blue square in its lower-right corner. Once all the students have submitted their answers, click on that square and drag it down to the last student's row. This will copy the formula you entered into each row. (And since we had the `$`-sign in *C\$2* and *E\$2* (or wherever the answers were), those cell locations will be

unchanged in all the new formulae; since we didn't have the \$-sign in C3 and E3 (or wherever the first student's answers were), those cell locations will automatically increment for each row.)

(Unfortunately, you do have to wait for students to submit the answers before you drag these formulae down. If you drag them down into blank rows, the form will recognize that those rows are already in use and subsequent submissions will skip them.)

(4) If you want Google Docs to automatically **calculate percentages**, click on the cell to the right of the first student's "total correct" cell (in other words, to the right of the one we just added a formula to). Enter an = sign, click on the student's "total correct" cell, enter a / sign, and enter the total number of questions. So it should look something like this: =E3/2 . This divides the student's number of total correct answers by the number of possible correct answers. When you hit enter, the cell will have a 1 if the student got 100%, a 0 if the student got a 0%, and a decimal for anything in between. If you click the *Edit* tab, and, while the cell is highlighted, click the *Format* drop-down menu, and then select one of the percentage options, the cell will be displayed as a standard percentage. You can do the drag-down procedure as before to copy this formula for all the other students as well.

**Once you know how to do this, it can save an enormous amount of time. I kept a blog for each class period, and posted the agenda and assignments every day. I would sometimes make a "take home quiz" like this and post the link. Other times, when I was required to give a multiple choice test at school, I would make it like this and administer it in the library or computer lab. And, of course, this same method can be easily modified for regular gathering of contact information on the first day of school (bonus: student email addresses will be copy-and-paste-able), for learning-style inventories, for parent surveys, or just about anything else.

And I saved all that time for grading essays!

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